

PRC-4184
Rack-mount Chassis

User's Manual



Portwell Inc.

3F, No. 88, Sec. 1, Nei-Hu Rd., Taipei, Taiwan, R.O.C.
Headquarter: +886-2-2799-2020 Fax: +886-2-2799-1010
<http://www.portwell.com.tw>
Email: info@mail.portwell.com.tw



Table of Contents

Chapter 1	Introduction	2
1.1	Product Design Concept.....	2
1.2	Product Specification.....	2
1.3	Product Figure	3
1.3.1	Figure of PRC-4184	3
1.3.2	Engineering Drawing	3
Chapter 2	System Configuration	4
2.1	Open the System	4
2.2	Remove the Card Retainer.....	5
2.3	Install the Backplane or Motherboard	6
2.4	Install the Storage Devices.....	6
2.5	Install Add-on Cards	9
2.6	Secure Add-on cards with Card Retainer.....	10
2.7	Swap the Fans and Replace the Filter	11
2.8	Power Supply Installation	13
2.9	Rack-mounting PRC-4184.....	14
Chapter 3	Operation Guides.....	15
3.1	Function introduction of the Front Panel	15
3.2	How to Operate the System	16
Appendix 1	Backplane - “PBP-14P4”	15
Appendix 2	Power Supply - “ORION-330A”	23

Chapter 1 Introduction

1.1 Product Design Concept

PRC-4184 is the most cost-effective 19" 4U height rack-mount chassis designed for various kinds of server computer telephony integration platform and telecommunication applications. This rugged, sturdy, full-sealed and well-ventilated steel chassis is specially designed to withstand heavy shock, dust, humidity, trembling vibration and extremely high operating temperature in the harsh environment. With many enhancements to meet the newest technology changes, PRC-4184 is the best choice for your rack-mount system integration.

1.2 Product Specification

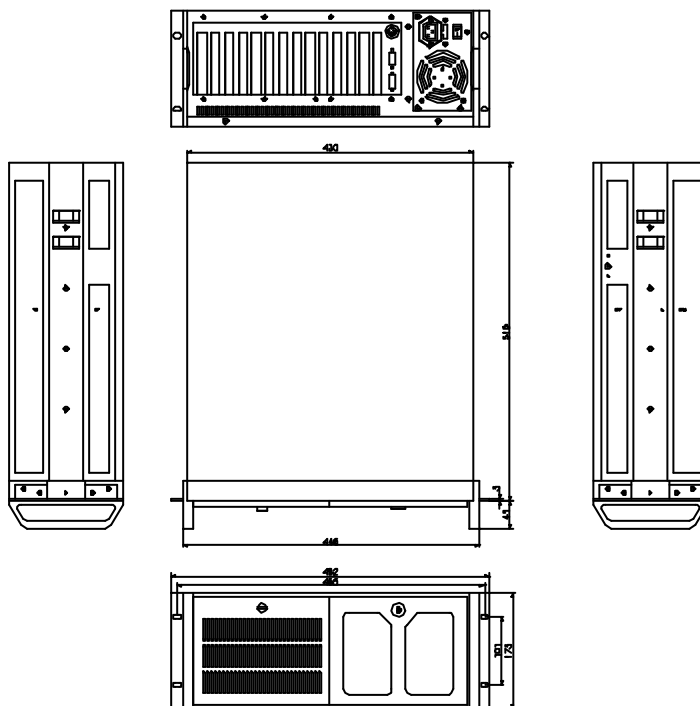
- Construction: Heavy-duty steel
- Air Filter: One removable front-panel filter
- Cooling: Two 12cm ball-bearing fans
- Disk drive space: 3 x 5.25" + 1 x 3.5" drive space
- Indicators: LED displays for power On/Off and HDD
- Keyboard connector: PS/2 din connector on front panel and standard din connector on rear panel
- Standard color: Light gray and Black
- Dimension:
 - ♦ 483 (W) x 177 (H) x 510 (D) mm
 - ♦ 19" (W) x 7" (H) x 16.7" (D)
- Weight:
 - ♦ Net: 16Kg
 - ♦ Gross: 20Kg
- Backplane: PBP-14P4 (AT/ATX power connector)

1.3 Product Figure

1.3.1 Figure of PRC-4184



1.3.2 Engineering Drawing



Chapter 2 System Configuration

A standard packaging of PRC-4184 should have the following parts:

- a. **PRC-4184 chassis**
- b. **ORION-330A power supply**
- c. **PBP-14P4 passive backplane**
- d. **Manual**
- e. **Accessory**

If any of the above parts is missing, please report to your supplier immediately.

The PRC-4184 can be configured in different manners based on the backplane and power supply unit that are applied. A standard configuration procedure is listed below.

2.1 Open the System

There are two screws on the rear side of the chassis to fix the top cover of PRC-4184. Just remove them and slide the cover out. Lift up the cover and gently remove the top cover. (**Fig. 2-1, Fig. 2-2, Fig. 2-3**)



Fig. 2-1 Remove the left screw from the rear side of chassis

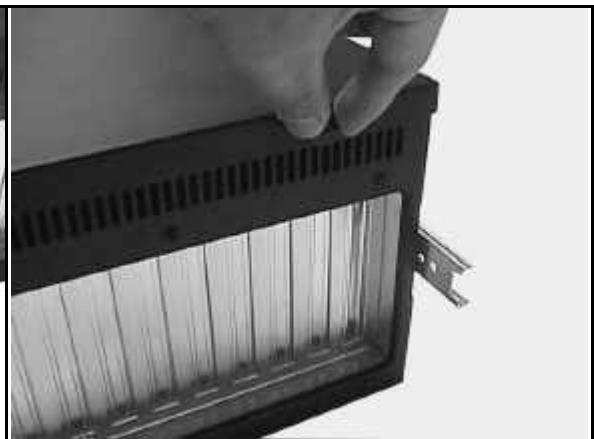


Fig. 2-2 Remove the right screw from the rear side of chassis

Please refer to the top overview after opening the top cover (**Fig. 2-4**). Users may easily find backplane (PBP-14P4) and power supply unit (ORION-330A). ORION-330A is an AT power supply and, by default, ORION-330A is already well connected to PBP-14P4 backplane, front panel On/Off power switch and chassis fan. Therefore, there is only storage device to be wired up with power supply later on.

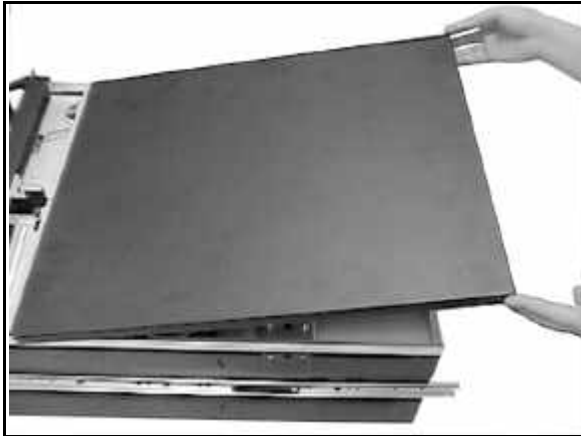


Fig. 2-3 Lift up the top cover of chassis and remove it

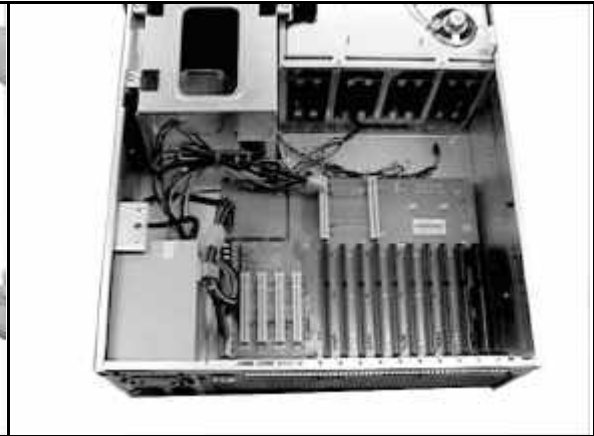


Fig. 2-4 Top inner overview of chassis

2.2 Remove the Card Retainer

The card retainer is designed to hold the add-on cards into PCI/ISA slots (it is also used to hold SBC into PICMG slot for industrial application) as a secure mechanism. This card retainer is needed only in harsh environment, where secure facility is required to prevent the card from dismounted. Please remove the card retainer before you start system hardware installation.

To remove the card retainer, please lift up the black knob at the end of the card retainer and bring up this end (**Fig. 2-5, Fig. 2-6**). Users may then move the entire card retainer away by unlocking the other end.

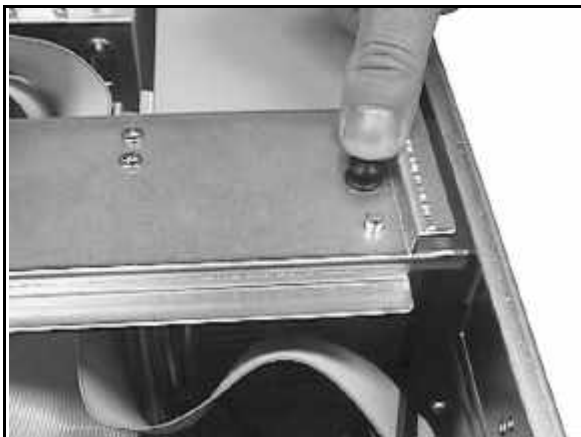


Fig. 2-5 Lift up the knob on the card retainer

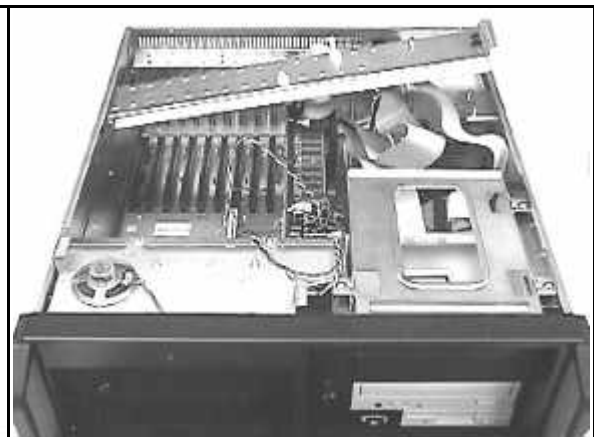


Fig. 2-6 Lift up the card retainer to remove it

2.3 Install the Backplane or Mother Board

A standard PRC-4184 industrial chassis is shipped with ORION-330A power supply and PBP-14P4 backplane. Users could ignore the following procedures and enjoy this standard product set. However, the following procedure is needed to configure your system if users need to change power supply or backplane (replaced by mother board) for different demands.

Please remove the connected power cable and take the backplane out. Insert the target board (backplane or mother board) into the chassis, house in screws into the holes available, and then connect the power cable onto the board. Please be sure that the size of the board is no larger than PBP-14P4.

2.4 Install the Storage Devices

1. Users may customize the installation of storage devices. Basically, one 3.5" and three 5.25" device bays are provided (**Fig. 2-7**).



Fig. 2-7 Front view of drive bay (three 3.5" and one 5.25")



Fig. 2-8 Remove the 4 screws on the top of drive bracket

2. Remove the 4 screws (**Fig. 2-8**) on the top of the drive bracket and the other one attached to the bottom of the chassis as drive bay grounding (**Fig. 2-9**). Take the drive bracket out of the chassis (**Fig. 2-10**).
3. Remove the two side screws that hold the 3.5" drive bay front cover (**Fig. 2-11**). Remove the 3.5" drive bay front cover gently (**Fig. 2-12**).



Fig. 2-9 Remove the drive bay grounding screw from the chassis bottom



Fig. 2-10 Drive bracket being removed from PRC-4184



Fig. 2-11 Dismount the two side screws to remove the 3.5" drive bay front cover



Fig. 2-12 Remove the 3.5" drive bay front cover

4. Install the 3.5" device into the 3.5" drive bay and secure it with four side screws onto the bracket (**Fig. 2-13**).



Fig. 2-13 Install 3.5" device into 3.5" drive bay



Fig. 2-14 Dismount the two side screws to remove the 5.25" drive bay front cover

5. Remove the two side screws that hold the 5.25" drive bay front cover (**Fig. 2-14**). Remove the 5.25" drive bay front cover gently (**Fig. 2-15**)

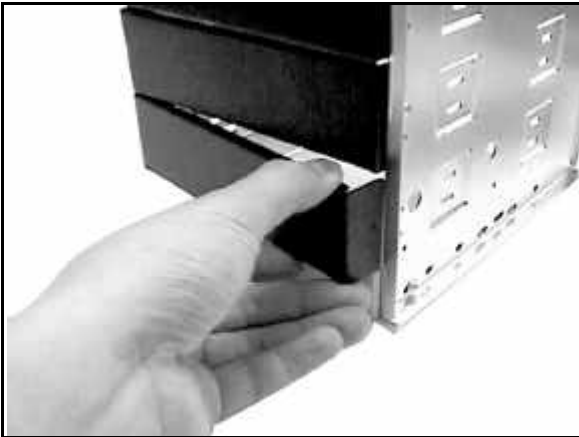


Fig. 2-15 Remove the 5.25" drive bay front cover



Fig. 2-16 Install 5.25" device into the 5.25" drive bay

6. Install the 5-1/4" device into the 5-1/4" drive bay and secure it with four side screws onto the bracket (**Fig. 2-16**). Users may also secure a 3.5" device over the 5-1/4" drive bay, provided additional drive housing or mobile rack is available. Please secure all devices onto the drive bay bracket. All the additional screws to secure your devices are packaged in the accessory bag.
7. A completed device bracket with devices should be looking like **Fig. 2-17**, where one FDD and one CDROM devices are installed.



Fig. 2-17 Device bracket installed with one FDD and one CDROM

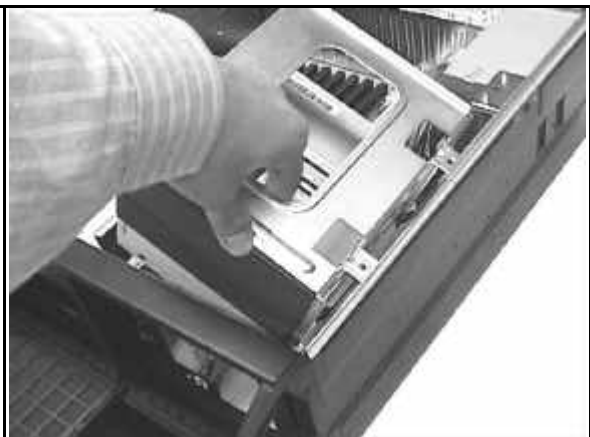


Fig. 2-18 Install the device bracket into the chassis

8. Users may then house-in the device bracket into the chassis. Please note that it is necessary to slide in the right side of the bracket and left side thereafter (**Fig. 2-18**)

9. Mount back all the screws back, including the grounding screw, and a well-seated device bracket with devices installed should look like **Fig. 2-19** from front panel. Make sure that all storage devices are wired with 4-pin power connector from ORION-330A



Fig. 2-19 A completion view of the device bracket with devices installed



Fig. 2-20 Remove rear slot bracket

2.5 Install Add-on Cards

To install add-on cards, please remove the rear slot brackets (**Fig. 2-20**) and apply the add-on cards onto the slots. In the case of using industrial single board computer, mount the SBC onto PICMG or ISA slot (**Fig. 2-21**). CPU, memory and other device port (such as parallel port bracket) can be mounted at this stage on the convenience of users (**Fig. 2-22**). Remember to secure back the screws to safely hold these add-on cards or SBC board. Users may also apply the flat signal cable between the board and devices. The same rule applies to power cable from power supply (**Fig. 2-23**).



Fig. 2-21 A completion view of installing one SBC and one PCI VGA card

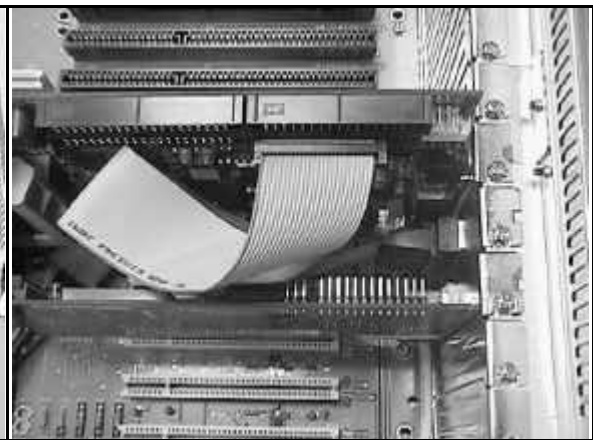


Fig. 2-22 A completion view of applying parallel port cable on bracket

To enable LED indicator and switch over the front panel, users may refer to the Mother Board or SBC manual to properly apply “Reset”, “Speaker”, “Power LED”, and “HDD LED” cables onto the correct pins on board (**Fig. 2-24**)

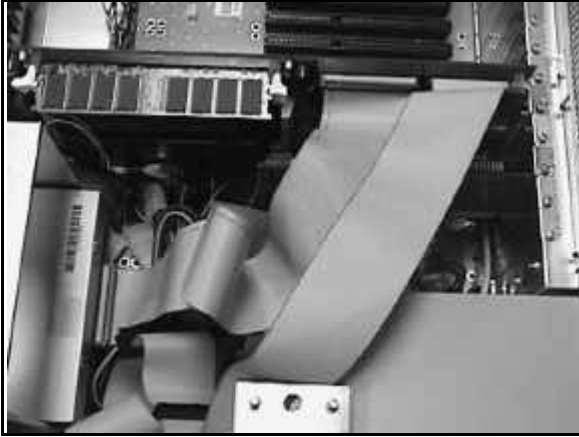


Fig. 2-23 A completion view of applying flat signal cable (IDE and FDD cables) between SBC and device

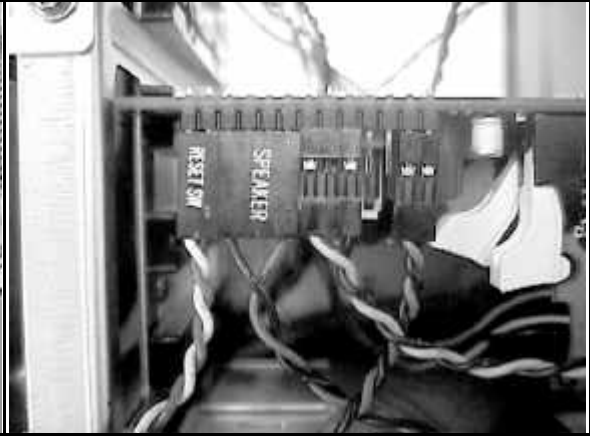


Fig. 2-24 Apply LED indicator /switch cable to SBC/Mother board

2.6 Secure Add-on Cards with Card Retainer

Users may have removed the card retainer (**Fig. 2-25**) before installing add-on cards. By default, there are four adjustable plastic screw-like retention bars (**Fig. 2-26**) on the card retainer that are used to secure add-on cards. Users may remove the screws to allow the retention bar adjustable. Find the best hole to seat the bar and properly adjust the bar to precisely and firmly touch the top of a target add-on card. Prepare all the retention bars for all the add-on cards.



Fig. 2-25 Card Retainer

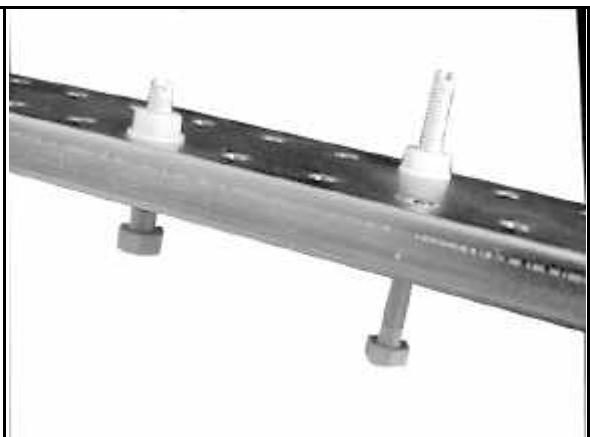


Fig. 2-26 Plastic screw-like retention bars

Lock the card retainer on the chassis (**Fig. 2-27**) and balance it onto the other side (**Fig. 2-28**)

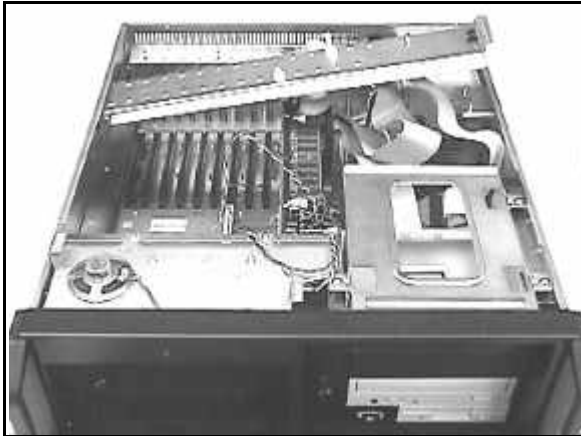


Fig. 2-27 Lock card retainer back to chassis



Fig. 2-28 Balance the other side of card retainer

Press down the knob to lock the card retainer (**Fig. 2-29**)

Users may chop off the surplus part on the card retainer in order to restore the chassis top cover (**Fig. 2-30**).

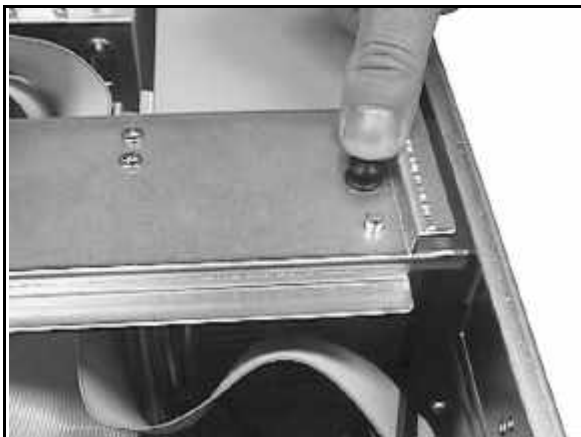


Fig. 2-29 Lock card retained knob



Fig. 2-30 Chop off the surplus part of the retention bar

2.7 Swap the Fans and Replace the Filter

The fans and filter of the chassis are swappable for cleaning.



Swap the Fans

To swap the fans, please shut down the system and take off the metal pare of the fan bracket, to swap the 2 defective fans.



Replace the Filter

The filter will hold the dust while fans are operating. If the airflow through the filter is not breezing smoothly as it was, the filter needs to be replaced with a clean one. To do so, please open the front cover (**Fig. 2-31**).

Slide down the filter cartridge attached to the front cover (**Fig. 2-32**).

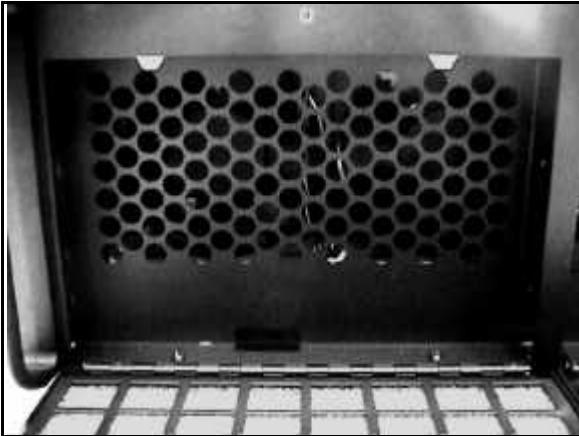


Fig. 2-31 Front view of cooling opening



Fig. 2-32 Slide down the filter cartridge

Remove the old filter and replace with a new one (**Fig. 2-33**).

Restore the filter cartridge back to the front cover and push up to right position (**Fig. 2-34**).

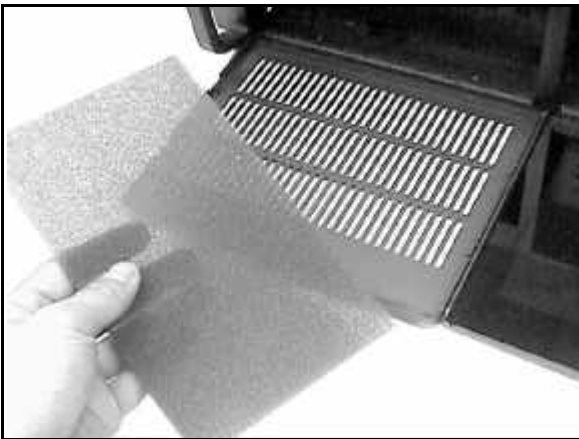


Fig. 2-33 Remove the old filter



Fig. 2-34 Push back the filter cartridge

2.8 Power Supply Installation

Please select a correct type of power supply (PS/2 type or redundant) before you read through the right installation procedure.



How to Install a Traditional PS/2 Power Supply

Remove the four screws at the back of ORION-330A and place in the new power supply into the chassis. Tight up the new power supply with screws through the original holes.

Whichever traditional PS/2 type power supply (AT or ATX), please connect the power connector onto the backplane or mother board power socket. Apply 4-pin power connectors from power supply to all storage devices.



How to Install a Redundant Power Supply

A redundant power supply has swappable and removable power module and is therefore different from a traditional one. They thus need more space for modules to be swappable.

Here are the procedures for installing a redundant power supply into the system:

1. Take off the retention plate on the output (rear) holes of the power supply
2. Apply the special wings (metal part) on the rear side of the power supply
3. Secure the power supply on the chassis with screws
4. Place the power connector (AT or ATX) onto the backplane or motherboard power socket to deliver power onto system
5. Make sure the LED (Power ON, HDD LED) and system reset button on the chassis front panel are correctly connected with the right pins on SBC (for IPC) or motherboard
6. Apply 4-pin power connectors from power supply to all storage devices



How to Connect the ATX Power Supply and Create AT Power Function

If users come across with an ATX PSU configuration, where AT power function is expected, simply short up the PS-ON pin and GND pin on the 20-pin ATX power connector. Once, power on, power supply will be ignited and deliver the power properly. For industrial application with SBC and backplane involved, there is a 4-pin ATX PSU control connector available for ATX function wiring. Users may then short up pin-3 and pin-4 of this connector to meet up the same requirement of creating an AT function with only ATX PSU.

2.9 Rack-mounting PRC-4184

PRC-4184 makes a lot difference if mounted within a rack-mount system as a completed station. There are four securing holes on each side of PRC-4184 chassis. A secure bar is required to install PRC-4184 into a rack-mount system. To install the securing bar, pull out the inner securing bar out half way through, move the track clipper up (**Fig. 3-35**), and pull out the bar completely (**Fig. 3-36**).



Fig. 2-35 Move the track clipper up

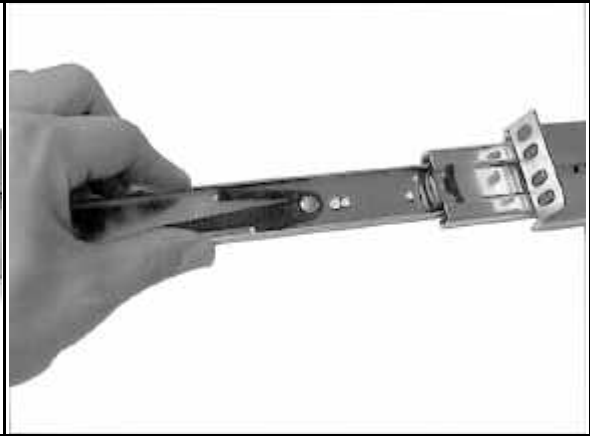


Fig. 2-36 Pull out the inner securing bar

Fig. 3-37 shows the top view of the inner securing bar. Different securing bar allows different number of screws to be used for securing the bar onto the side of chassis. Have all the screws firmly seated onto the right position (**Fig. 3-38**).

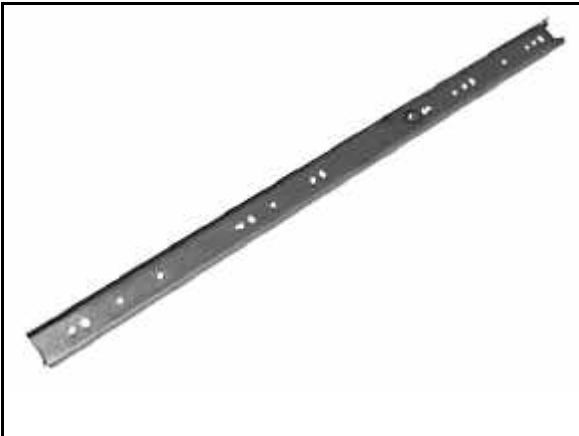


Fig. 2-37 Inner securing bar



Fig. 2-38 Installation of inner securing bar

Users may then screw in the outer securing bar onto the rack-mount chassis holder and thereafter PRC-4184 is ready to be rack-mounted.

Chapter 3 Operation Guides

3.1 Function Introduction of the Front Panel

Use the front panel key to open the panel cover. You should see, from top to bottom, system reset button, HDD active LED (red), Power LED (green), power switch, and a PS/2 type keyboard connector (**Fig. 3-1**).



Fig. 3-1 Front panel of LED and switch

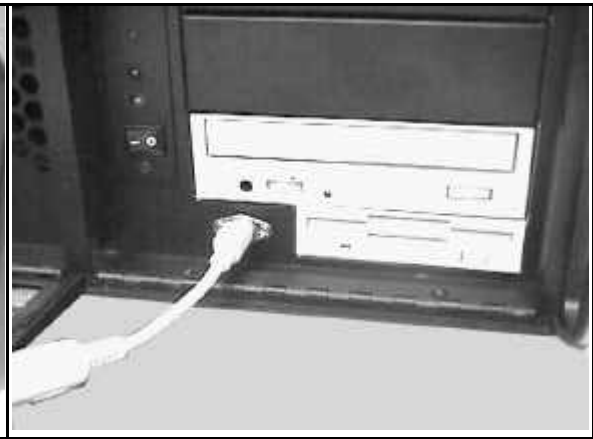


Fig. 3-2 Apply KBD at front PS/2 KBD din

If connected correctly, press Reset button will activate system reset. If connected correctly, Power LED will stay lit up (green) if you do not turn off the power switch. If connected correctly, HDD active LED will stay flashing (red) any time there is HDD access operation.

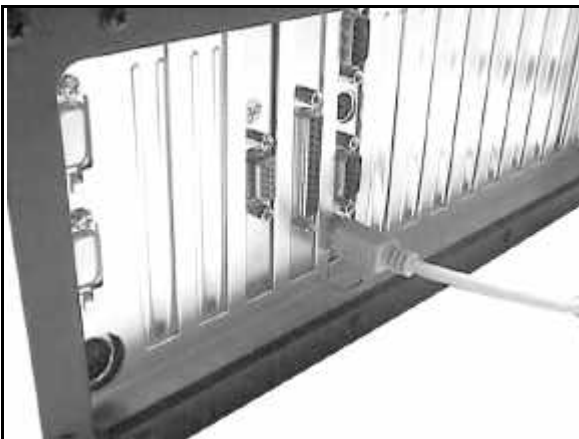


Fig. 3-3 Apply KBD at rear PS/2 KBD din

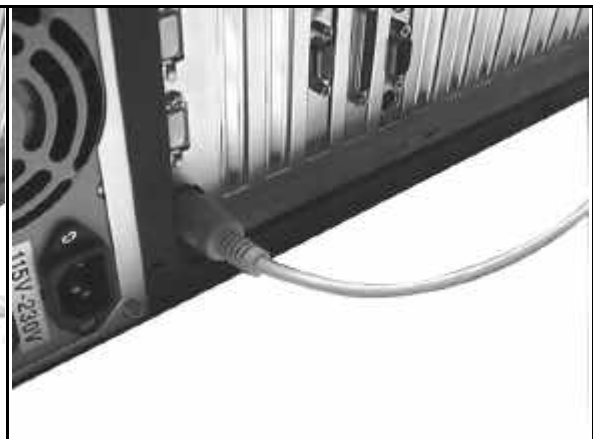


Fig. 3-4 Apply KBD at standard KBD din

You may adopt your system keyboard through the PS/2 keyboard port (**Fig. 3-2**), or the one provided on your SBC or mother board (from the rear side, **Fig. 3-3**). Moreover, if standard KBD connector is available over the target system board and

provided users have connected a 5-pin KBD connection cable between SBC and backplane in industrial application, the standard KBD connector on motherboard or backplane can then be used (**Fig. 3-4**)

3.2 How to Operate the System

For a successful operation, users may go through the checklist given below before power on.

1. SBC and add-on cards are well inserted onto backplane slots.
2. Flat cables for IDE/FDD are well connected.
3. Power cables are wired up with storage devices.
4. IDE storage devices are properly configured with master/slave characteristics.
5. Front panel LED and switch are lined up with SBC/mother board pins.
6. Screws are firmly secured on drive bay bracket and add-on card brackets.
7. Power supply is switched to proper AC power source if using other type of PSU.
8. KBD and mouse are hooked up with system board.
9. Additional peripheral cables are all tied up with proper devices or ports.
10. VGA card is connected with a CRT and CRT is powered and turned on.
11. SBC or motherboard has been loaded optimal BIOS setting.